



August 18, 2020

VIA IBFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W.
Washington, D.C. 20554

Re: *Ex Parte* Notice, File No. SAT-MOD-20200417-00037

Dear Ms. Dortch:

On August 14, 2020, representatives of Kuiper Systems LLC, a wholly owned subsidiary of Amazon.com Services LLC (collectively, “Amazon”), spoke by telephone with Federal Communications Commission staff regarding the above-referenced modification application in which Space Exploration Holdings, LLC (“SpaceX”) seeks to substantially redesign its satellite constellation (the “Third Modification”).¹ A list of participants is attached.

SpaceX characterizes its Third Modification as simply building on its first two modifications,² but close inspection shows this is not the case. SpaceX’s proposed modification is no mere “adjustment.”³ It is an entire system redesign that involves every SpaceX satellite, including satellites deployed in its previously authorized 550 km orbit. The configuration outlined in the Third Modification bears little resemblance to the original constellation proposed by SpaceX and presents substantial, unresolved space safety and interference issues to other licensees and applicants, such as the Kuiper System.⁴

The significant risks to space safety posed by the Third Modification warrant its denial. SpaceX’s proposed modification would move all of its satellites to altitudes ranging from 540 km to 570 km, with an orbital variation of +/- 30 km. Amazon’s analysis of the 1,240 SpaceX satellites that would overlap with 784 satellites in the Kuiper System shows that this overlap could result in

¹ Application of Space Exploration Holdings, LLC for Modification of Authorization for the SpaceX NGSO Satellite System, IBFS File No. SAT-MOD-20200417-00037 (filed Apr. 17, 2020).

² *Id.* at Attachment A, 1.

³ *Id.* at iii.

⁴ See *Kuiper Systems LLC, Order and Authorization*, FCC 20-102, IBFS File No. SAT-LOA-20190704-00057 (rel. July 30, 2020) (“Kuiper System Grant”).

an average of 509 daily conjunction events of distance less than 1 km, compared to only 32 such events with the existing orbital debris catalog.⁵ SpaceX fails to analyze the potential collision risk with Kuiper and refuses to acknowledge potential solutions.⁶

In addition to the orbital altitude changes, the Third Modification would also expand SpaceX's Ka-band beam footprints by 50 to 150 times what is currently authorized, lower the gateway elevation angle by 15 degrees, and double the number of satellites linking to each of its gateways.⁷ As Amazon explained in its Reply Comments, interference concerns are at the heart of the *Teledesic* standard—a standard that SpaceX fails to meet.⁸ As the Commission concluded previously, “[i]f a modification would worsen the interference environment, that would be a strong indication that grant of the modification would not be in the public interest.”⁹ The system redesign proposed in the Third Modification would significantly worsen the non-geostationary satellite orbit (“NGSO”) fixed-satellite service (“FSS”) interference environment for the Kuiper System and other operators in both the 2016 and 2020 processing rounds including Kepler,¹⁰ SES/O3b,¹¹ and Viasat.¹² However, SpaceX has not proposed a sufficient remedy to the significant interference issues that result from its system redesign.

Authorizing SpaceX's proposed system redesign as part of the prior processing round would undermine the Commission's policy goals underlying its use of NGSO FSS processing rounds, depriving other licensees and applicants of a reasonable expectation regarding the operational and interference environment for all parties and enabling serial modifications to continue. The SpaceX Third Modification was filed after the 2020 Processing Round opened, and competition would be promoted by placing all new and substantially redesigned NGSO FSS systems that increase interference in the same processing round.

⁵ Petition to Deny and Comments of Kuiper Systems LLC, IBFS File No. SAT-MOD-20200417-00037 (filed July 13, 2020), at 10-11.

⁶ Such solutions include SpaceX limiting the orbital variance of its satellites or changing the altitude of its satellites' orbits such that they do not overlap with another large constellation. Reply Comments of Kuiper Systems LLC, File No. SAT-MOD-20200417-00037, at 3 (filed Aug. 7, 2020).

⁷ *Id.* at 2, 20.

⁸ *Id.* at 12.

⁹ *Id.* (quoting *Space Exploration Holdings, LLC*, Order and Authorization, IBFS File No. SAT-MOD-20181108-00083, at ¶ 9 (Apr. 26, 2019)).

¹⁰ Petition to Deny of Kepler Communications Inc., IBFS File No. SAT-MOD-20200417-00037, at 1 (filed July 13, 2020) (“[T]he Modification as proposed will significantly increase the overall interference environment for some systems, including Kepler's.”).

¹¹ Petition to Deny or Defer of SES Americom, Inc. and O3b Limited, IBFS File No. SAT-MOD-20200417-00037, at 4 (filed July 13, 2020) (“Here, the substantial worsening of the interference environment for NGSO and GSO systems requires the Commission to deny the Application.”).

¹² Petition to Deny or Defer of Viasat, Inc., IBFS File No. SAT-MOD-20200417-00037, at 37 (filed July 13, 2020) (“[T]he proposed SpaceX modification presents significant risks of interference into GSO networks and NGSO systems that SpaceX has not addressed or mitigated.”).

Additionally, SpaceX has not addressed important concerns raised by commenters about the performance of its operational spacecraft, such as the reliability of its satellites, and the apparent change to its satellite payload design. Reliability affects space safety, and widening the beam footprints of its satellite antennas increases interference to other Ka-band NGSO FSS systems. SpaceX should correct this lack of transparency by clarifying these points and answering basic questions regarding its fleet that were raised by commenters.

In conclusion, SpaceX's Third Modification should be denied due to its significant deleterious effects on space safety. If the substantial space safety challenges warranting denial can be overcome, the Commission should include the entire modified SpaceX constellation as part of the 2020 Processing Round to ensure that the public interest is served.

Please feel free to contact me with any questions regarding this submission.

Respectfully submitted,

/s/ Mariah Dodson Shuman

Mariah Dodson Shuman
Corporate Counsel
Kuiper Systems LLC,
an Amazon subsidiary

Attachment

Commission Attendees	Amazon Attendees
Jose Albuquerque Jameyenne Fuller Joseph Hill Samuel Karty Karl Kensinger Jay Whaley	Julie Zoller David Kaufman Kalpak Gude Darren Achord Mariah Dodson Shuman